(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a full duplex communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said electrically-conducting media includes electrical power wiring of a building; wherein at least one of said electrically-conducting media is used to carry both local area network data and electrical power; and wherein the local area network data and electrical power are combined using frequency-domain multiplexing.

40. (Twice Amended) A local area network for data communication, sensing, and control comprising at least three serial intelligent cells interconnected exclusively by electrically-conducting media into at least two communicating pairs, wherein:

(a) each of said electrically-conducting media physically interconnects no more than two of said serial ~~intelligent~~ cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a full duplex communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said electrically-conducting media is used to carry both local area network data and electrical power; and wherein the local area network data and electrical power are combined using frequency-domain multiplexing.

47. (Twice Amended) A local area network for data communication, sensing, and control comprising at least three serial intelligent cells interconnected exclusively by electrically-conducting media into at least two communicating pairs, wherein:

(a) each of said electrically-conducting media physically interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a full duplex communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said plurality of serial intelligent cells receives electrical power via said electrically-conducting media; and wherein at least one of said plurality of serial intelligent cells comprises a telephony/data splitter/combiner.

53. (Amended) A local area network for data communication, sensing, and control comprising at least three serial intelligent cells interconnected exclusively by electrically-conducting media into at least two communicating pairs, wherein:

(a) each of said electrically-conducting media physically interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a full duplex communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair.

wherein at least one of said plurality of serial intelligent cells comprises:

(a) a line interface;

(b) a modem;

(c) a control block;

(d) a power supply; and

(e) a telephone interface;

and wherein one of said plurality of serial intelligent cells is interconnected to a public telephone network interface.

60. (Amended) A local area network for data communication, sensing, and control comprising at least three serial intelligent cells interconnected exclusively by electrically-conducting media into at least two communicating pairs, wherein:

(a) each of said electrically-conducting media physically interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a full duplex communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said electrically-conducting media includes electrical power wiring of a building; wherein at least one of said plurality of serial intelligent cells receives electrical power via said electrically-conducting media; and wherein at least one of said plurality of serial intelligent cells comprises a telephony/data splitter/combiner.

61. (Amended) A local area network for data communication, sensing, and control comprising at least three serial intelligent cells interconnected exclusively by electrically-conducting media into at least two communicating pairs, wherein:

(a) each of said electrically-conducting media physically interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a full duplex communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said electrically-conducting media includes electrical power wiring of a building; wherein at least one of said plurality of serial intelligent cells receives electrical power via said electrically-conducting media; and wherein at least one of said plurality of serial intelligent cells comprises a power/data splitter/combiner.

64. (Amended) A local area network for data communication, sensing, and control comprising at least three serial intelligent cells interconnected exclusively by electrically-conducting media into at least two communicating pairs, wherein:

(a) each of said electrically-conducting media physically interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a full duplex communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said electrically-conducting media includes electrical power wiring of a building; and wherein at least one of said plurality of serial intelligent cells comprises:

(i) a line interface,

(ii) a modem,

(iii) a control block,

(iv) a power supply, and

(v) a computer bus connector.

66. (Amended) A local area network for data communication, sensing, and control comprising at least three serial intelligent cells interconnected exclusively by electrically-conducting media into at least two communicating pairs, wherein:

(a) each of said electrically-conducting media physically interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a full duplex communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said electrically-conducting media includes electrical power wiring of a building; wherein at least one of said plurality of serial intelligent cells comprises:

(i) a line interface,

(ii) a modem,

(iii) a control block,

(iv) a power supply, and

(v) a telephone interface;

and wherein one of said plurality of serial intelligent cells is interconnected to a public telephone network interface.

69. (Amended) A local area network for data communication, sensing, and control comprising at least three serial intelligent cells interconnected exclusively by electrically-conducting media into at least two communicating pairs, wherein:

(a) each of said electrically-conducting media physically interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a full duplex communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said plurality of serial intelligent cells receives electrical power via said electrically-conducting media; and wherein at least one of said plurality of serial intelligent cells comprises a power/data splitter/combiner.

Please add new claims 72-97 as follows:

72. (New) A local area network for data communication, sensing, and control comprising a plurality of serial intelligent cells interconnected exclusively by electrically-conducting media into at least one communicating pair, wherein:

(a) each of said electrically-conducting media interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said electrically-conducting media includes electrical power wiring of a building; wherein at least one of said electrically-conducting media is used to carry both local area network data and electrical power; and wherein the local area network data and electrical power are combined using frequency-domain multiplexing, the local area network functioning as a multiplexer, wherein at least one of said plurality of serial intelligent cells is connected to a high data rate connection whose bandwidth is multiplexed to at least one other of said plurality of serial intelligent cells.

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~~73~~. (New) The local area network as in claim ~~72~~, functioning as a voice multiplexer, wherein at least one of said plurality of serial intelligent cells is connected to a telephone.

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~~74~~. (New) A local area network for data communication, sensing, and control comprising a plurality of serial intelligent cells interconnected exclusively by electrically-conducting media into at least one communicating pair, wherein:

(a) each of said electrically-conducting media interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said plurality of serial intelligent cells receives electrical power via said electrically-conducting media; and wherein at least one of said plurality of serial intelligent cells comprises a telephony/data splitter/combiner.

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~~75.~~ (New) The local area network as in claim 7, ~~74~~, wherein at least one of said plurality of serial intelligent cells comprises a power/data splitter/combiner.

9
~~76.~~ (New) The local area network as in claim 8, ~~75~~, wherein said power/data splitter/combiner comprises an AC power/data splitter/combiner.

10
~~77.~~ (New) The local area network as in claim 8, ~~75~~, wherein said power/data splitter/combiner comprises a DC power/data splitter/combiner.

11
~~78.~~ (New) A local area network for data communication, sensing, and control comprising a plurality of serial intelligent cells interconnected exclusively by electrically-conducting media into at least one communicating pair, wherein:

(a) each of said electrically-conducting media interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said electrically-conducting media includes electrical power wiring of a building; wherein at least one of said plurality of serial intelligent cells receives electrical power via said electrically-conducting media; and wherein at least one of said plurality of serial intelligent cells comprises a telephony/data splitter/combiner.

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~~19.~~ (New) A local area network for data communication, sensing, and control comprising a plurality of serial intelligent cells interconnected exclusively by electrically-conducting media into at least one communicating pair, wherein:

(a) each of said electrically-conducting media interconnects no more than two of said serial intelligent cells;

(b) each of said at least one communicating pair includes one of said electrically-conducting media and exactly two of said serial intelligent cells;

(c) each of said at least one communicating pair engages in a communication exclusively over said electrically-conducting media; and

(d) each of said at least one communicating pair is operative to engage in said communication bidirectionally and independently of the communication of any other of said at least one communicating pair;

wherein at least one of said electrically-conducting media includes electrical power wiring of a building; wherein at least one of said plurality of serial intelligent cells receives electrical power via said electrically-conducting media; and wherein at least one of said plurality of serial intelligent cells comprises an AC power/data splitter/combiner.

80. (New) The local area network as in claim 1, comprising at least four said serial intelligent cells interconnected exclusively by said electrically-conducting media into at least three communicating pairs.

81. (New) The local area network as in claim 40, comprising at least four said serial intelligent cells interconnected exclusively by said electrically-conducting media into at least three communicating pairs.

82. (New) The local area network as in claim 47, comprising at least four said serial intelligent cells interconnected exclusively by said electrically-conducting media into at least three communicating pairs.

83. (New) The local area network as in claim 53, comprising at least four said serial intelligent cells interconnected exclusively by said electrically-conducting media into at least three communicating pairs.

84. (New) The local area network as in claim 60, comprising at least four said serial intelligent cells interconnected exclusively by said electrically-conducting media into at least three communicating pairs.

85. (New) The local area network as in claim 61, comprising at least four said serial intelligent cells interconnected exclusively by said electrically-conducting media into at least three communicating pairs.

86. (New) The local area network as in claim 64, comprising at least four said serial intelligent cells interconnected exclusively by said electrically-conducting media into at least three communicating pairs.

87. (New) The local area network as in claim 66, comprising at least four said serial intelligent cells interconnected exclusively by said electrically-conducting media into at least three communicating pairs.

88. (New) The local area network as in claim 69, comprising at least four said serial intelligent cells interconnected exclusively by said electrically-conducting media into at least three communicating pairs.

89. (New) The local area network as in claim 1, comprising only said at least three serial intelligent cells.

90. (New) The local area network as in claim 40, comprising only said at least three serial intelligent cells.

91. (New) The local area network as in claim 47, comprising only said at least three serial intelligent cells.

92. (New) The local area network as in claim 53, comprising only said at least three serial intelligent cells.

93. (New) The local area network as in claim 60, comprising only said at least three serial intelligent cells.

94. (New) The local area network as in claim 61, comprising only said at least three serial intelligent cells.

95. (New) The local area network as in claim 64, comprising only said at least three serial intelligent cells.

96. (New) The local area network as in claim 66, comprising only said at least three serial intelligent cells.